

REMARKS

Careful consideration has been given by the applicants to the Examiner's comments and rejection of the claims, as set forth in the outstanding Office Action, and favorable reconsideration and allowance of the application, as amended, is earnestly solicited.

Applicants note the Examiner's rejection of Claims 1-6 under 35 U.S.C. §102(b) as being allegedly anticipated by Keppel, U.S. Patent No. 1,214,553, as extensively discussed by the Examiner in the Office Action.

However, upon careful consideration of the art, applicants respectfully submit that the invention clearly and patentably distinguishes over Keppel, both as to structure and as to function of the check valve for MEMS devices.

In particular, the check valve, as shown and described in Keppel, includes a chamber interconnecting an inlet pipe and an outlet pipe, wherein a movable valve member, which is of a cup-shaped configuration, may be arranged so as to slidably extend within a sleeve or bushing member, which is in the form of a partially circular slide element or guide 9.

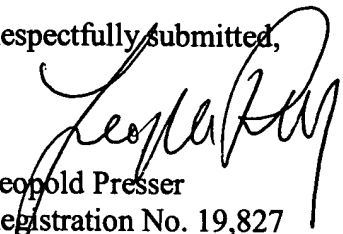
In particular, in the Keppel valve, upon activation from a valve closed position, as shown in Figure 1 into a valve open position, as shown in Figure 2, there is permitted only a minor partial and restricted flow of the amount of fluid being introduced through the inlet conduit 6 through the bypass apertures 10 and 15, so as to reach the discharge or outlet conduit 7 in a relatively small quantity at any particular instance. This particular structure would not be capable of providing for the rapid filling of MEMS devices with a supercritical fluid under supercritical pressures, and thereafter upon letdown of the pressure facilitate rapidly closing the check or non-return valve, so as to cause the valve member to engage the valve seat in a permanently locked fluid flow-inhibiting position,

whereby the entire check valve arrangement comes a permanent component of the MEMS hydraulic pressure system.

In contrast with the check valve of Keppel, as shown in the present drawings and as described in the application, the valve of Figures 1-3 of the present drawings, with the bypass channel communicating the valve member and on that conduit includes a diameter larger than the diameters of the inlet and outlet conduits, and has a disk shaped or plug member slidable in an axial position along axis A, as shown in Figure 1 of the drawings. In particular, the external diameter of the plug member 16 is analogous in size with and in contact with the internal diameter or walls of the valve chamber 14. Thus, upon opening of the valve, the plug member 16 is pushed entirely forwardly in the direction of the outlet conduit, thereby permitting the unobstructed flow of fluid from the inlet conduit 12 into the valve chamber and then through the bypass channel 20 into the discharge or outlet conduit 18 to the MEMS device. The bypass channel, if desired, may be of the same or approximate diameter as the internal diameters of the inlet and outlet conduits 12 and 18, so as to enable the extremely rapid flow of the supercritical fluid under superatmospheric pressure towards the MEMS hydraulic system and device so as to fill the latter. Thereafter, as shown in Figure 3, upon letdown of pressure, the plug member 16 is rapidly forced against the valve seat 24 of the inlet conduit 12 and forms a permanently sealed and integral check valve structure with the MEMS hydraulic system. This particular type of structure and function, which is of a simple nature, in contrast with the complex configuration of the valve of Keppel, is of a far superior construction and operating function, and is particularly adapted for the rapid infeed or supply of supercritical fluids to MEMS hydraulic systems. This would not be possible with the complicated mechanical valve structure of Keppel, and the claims in the present invention have been amended so as to clearly and unambiguously emphasize this particular patentable structural and functional aspect of the invention.

In view of the foregoing comments and amendments to the claims, which are deemed to now clearly and unambiguously distinguish in a patentable manner over Keppel, or any other art known to the applicants, the early and favorable reconsideration and allowance of the application by the Examiner is earnestly solicited. However, in the event that the Examiner has any queries concerning the instantly submitted Amendment, applicants' attorney respectfully requests that he be accorded the courtesy of possibly a telephone conference to discuss any matters in need of attention.

Respectfully submitted,



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